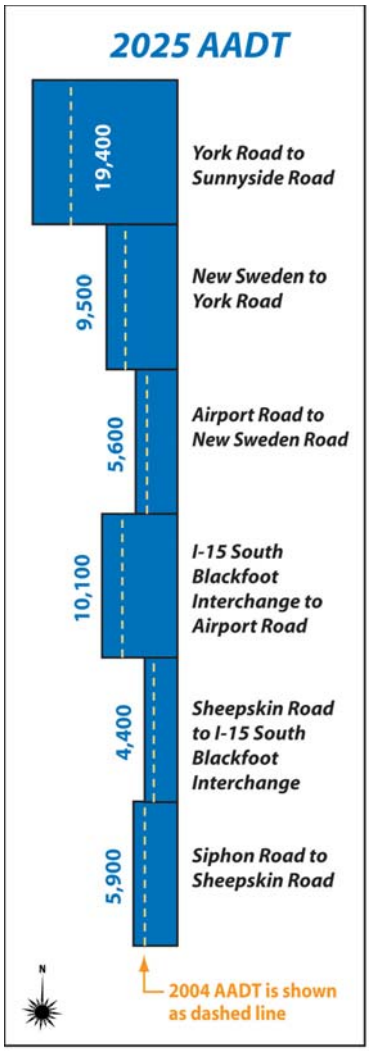
6.0 Future Transportation Conditions

US-91 will continue to serve residents, businesses, school districts, and visitors well into the future. In order to determine how US-91 might operate in the future, future travel demand forecasts are required. This section documents the role of the roadway in the regional transportation network, the methodology for estimating future traffic volumes for US-91, the Level of Service that would result in the future if no improvements to the existing highway are made, and the results of left-turn, right-turn and traffic signal warrant analysis in the future for US-91 intersections.

6.1 Role of US-91

The license plate survey conducted for this corridor plan provides insight into the role that US-91 plays in the regional transportation network. Additional insight was obtained from interviews with stakeholders along the corridor.[8] US-91 serves multiple purposes within the project area, from local community circulation to regional through-route.



The highway functions as a major work commute route, particularly between the City of Blackfoot northward and the City of Idaho Falls. It also is a key bus route for the local school district busing and transit providers.

Over time, land uses have developed adjacent to US-91 such that the roadway plays an important local access function to a wide variety of land uses. In this context, it is acts as a local street, particularly in the urbanized areas of Fort Hall, Blackfoot, Firth, and Shelley.

The highway also has an important economic role in the region, providing a farm-to-market corridor, including the movement of agricultural equipment, transport of farm products, and transport of processed goods. It also facilitates other goods movement providers that pick up and transport goods and services to the communities adjacent to US-91.

US-91 generally parallels I-15 and can be accessed from five I-15 interchanges within the corridor study area. As such, it provides an important regional function as a reliever for I-15 traffic in the event that a portion of I-15 must be closed to address a significant incident.

6.2 Future Traffic Volumes

A traffic growth rate was calculated based on historic average daily traffic volumes obtained by ITD for the years of 1990 to 2003. These were compared to growth rates calculated from the Bannock Planning Association and the Bonneville Metropolitan Planning Organizations travel demand forecasting model output. Although the historic trend and information from the Bannock Planning Association suggested a lower growth rate of 1.13% for the area south of the City of Blackfoot, the remainder of the US-91 corridor is expected to grow at a rate of 1.47% per year. The higher growth rate in the northern portion of the US-91 corridor is associated with growth and land development from the City of Blackfoot to the City of Idaho Falls.

[8] Detailed discussion of the issues and concerns is contained in Section 4.0 of this document.

The southern portion of the corridor falls largely within the Fort Hall Reservation. Growth and development on the Reservation is expected to be lower than for the northern portion of the US-91 corridor. However, this analysis used the higher rate of 1.47% for the full corridor in anticipation of potential additional levels of development and travel need between the City of Chubbuck and the City of Blackfoot. This resulted in an overall growth of 36% from 2004 to 2035.

By the year 2025, traffic volumes at the south end of the US-91 corridor are expected to increase by almost 25%. Average annual daily traffic (AADT) volumes will increase from approximately 3600 vehicles per average day today to approximately 5,900 AADT by 2025. Traffic volumes from the City of Blackfoot to York Road are expected to grow by 36%, increasing from almost 6,700 today to 9,000 vehicles per day by 2025.

Peak hour volumes are expected to continue to comprise 10-15% of the daily traffic. Peak hour volumes will be highest in the New Sweden Road to York Road section and in the I-15 South Blackfoot Interchange to Airport Road segment, and will be lowest near Ballard Road in the southern end of the corridor.

Heavy-truck percentages are expected to continue over the next 20 years and will fluctuate within the corridor. The highest percentages, 6 to10 and 10 to15%, will be found in the two sections between Sheepskin and Airport Roads. The Siphon Road to Sheepskin Road and the New Sweden Road to York Road sections will have the lowest heavy-truck shares, ranging between 2 to 3% of total traffic.

Table 6-1 summarizes and compares current and forecasted future traffic volumes (peak hour and daily) for each roadway segment.

Table 6-1: Existing and Future Traffic Volumes

Section	Existing (2004)		2025 No-Build		Percent Heavy Trucks
	Average Weekday PM Peak Hour	AADT	Average Weekday PM Peak Hour	AADT	
Siphon Road to Sheepskin Road	410-450	4,400	560-620	5,900	2-3%
Sheepskin Road to I-15 South Blackfoot Interchange	330-360	3,200	440-490	4,400	10-15%
I-15 South Blackfoot Interchange to Airport Road	630-690	7,400	850-940	10,100	6-10%
Airport Road to New Sweden Road	480-530	4,100	650-720	5,600	3-6%
New Sweden to York Road	690-760	7,000	930-1,030	9,500	2-3%
York Road to Sunnyside Road	1,360-1,500	14,300	1,850-2,040	19,400	2-3%

Source: ITD (existing AADT), JUB (peak hour counts), Parsons Brinckerhoff (2025 projections).

6.3 Future Roadway Operations

The future operations of US-91 and its intersections were analyzed using the same Highway Capacity Manual (HCM) methodology used for existing conditions.

6.3.1 US-91 Future Mainline Operations

Table 6-2 summarizes and compares existing and future no-action US-91 mainline LOS. Highlighted cells indicate locations which fall below ITD's LOS standard. Reported in these tables are the levels-of-service

as estimated using HCM techniques, the percent of time spent following other vehicles in the traffic stream (inability to pass), the average speed (based on the posted speed limit of 55 mph in the rural sections of US-91), and the peak hour volume-to-capacity ratio.

Table 6-2: Existing and Future No-Action Roadway Segment Level of Service

Roadway		Existing	2025 No-Action Conditions				ITD LOS Standard	Substandard in 2025?
From	To	LOS	LOS	% Time	Avg. Speed	v/c Ratio		
Siphon Road	Sheepskin Road	B	C	54.60%	49.5	0.21	C	No
Sheepskin Road	I-15 South Blackfoot I.C. (Bannock Road)	A	B	40.30%	54.6	0.17	C	No
I-15 South Blackfoot I.C. Bannock Road	Airport Road	C	D	69.10%	48.6	0.32	C	Yes
Airport Road	New Sweden Road	B	C	52.20%	52.2	0.24	C	No
New Sweden Road	York Road	C	D	65.50%	44.1	0.34	C	Yes
York Road	Sunnyside Road	A	A	-	58.4	-	C	No

The portion of US-91 through the City of Blackfoot (Segment 3) and the New Sweden Road to York Road segment will both operate below ITD's LOS standard by Year 2025.

6.3.2 Intersection Level of Service

Table 6-3 summarizes existing and future no-action US-91 intersection LOS. Cells in bold text indicate locations which fall below ITD's LOS C standard. The following US-91 intersections will fail to meet the ITD LOS standard (LOS C for urban and LOS B for rural). All intersections are currently unsignalized except where noted:

- Agency Road (urban)
- Northbound ramps at I-15 (rural)
- Walker Road (urban)
- Judicial Road (urban, signalized)
- Highland/Rich Roads (urban)
- Airport Road (urban)
- Locust Street (urban)
- Center and Taylor Streets (urban)
- New Sweden Road (urban)
- Country Club Road. (rural)
- Canyon Road (rural)

The following intersections will be within three seconds of falling to LOS D and will likely fail ITD's LOS standard within 1 to 5 years after 2025: Siphon Road (urban), Tyhee Road (urban), and Ballard Road (rural).

Table 6-3: Existing and Future No-Action Intersection Levels of Service

#	Intersection	2004 Existing Conditions		2025 Conditions		ITD LOS Standard	Substandard?
		LOS	Delay+	LOS	Delay+		
1	Siphon	C	16.0	C	24.8	C	No
2	Tyhee	C	15.6	C	23.5	C	No
3	Reservation	B	14.3	C	18.9	C	No
4	Ballard	B	11.2	B	12.8	C	No
5	Cemetery	B	13.4	C	15.9	C	No
6	Indian School	B	11.8	B	14.5	C	No
7	Agency	C	15.5	D	31.9	C	**Yes**
8	Ferry Butte	B	11.9	B	13.9	C	No
9	Bannock	A	9.9	B	10.4	C	No
10	Riverton	A	9.9	B	10.6	C	No
11	I-15 IC #89 SB	C	16.2	D	31.3	C	**Yes**
12	I-15 IC #89 NB	A	9.9	B	10.8	C	No
13	Shilling	B	13.3	C	17.4	C	No
14	Walker	C	19.4	E	50	C	**Yes**
15	Riverton (Blackfoot)	B	12.4	C	17.4	C	No
16	Grant	B	12.2	C	15.3	C	No
16b	Broadway	A	9.9	B	10.9	C	No
17	Judicial*	B	15.0	D	44.1	C	**Yes**
18	Bridge*	A	5.3	A	6.8	C	No
19	Alice*	A	6.7	A	8.6	C	No
20	Highland-Rich	C	22.6	F	81.1	C	**Yes**
21	Wooton	B	13.2	C	17.4	C	No
22	Airport	C	18.8	F	61.9	C	**Yes**
23	Mark	B	12.6	C	15.6	C	No
24a	Merkley-Tanner	B	12.5	C	15.4	C	No
24b	Hansen	A	9.7	B	10.5	C	No
25a	Weeding	A	9.5	A	10	C	No
25b	Cottonwood	B	11.5	B	13.3	C	No
26a	Wapello	B	11.0	B	12.1	C	No
26b	Wapello	B	11.1	B	12.4	C	No
27	Wapello-Firth	B	11.7	B	13.4	C	No
28	Wolverine	B	10.9	B	12	C	No
29	Firth	B	10.9	B	12.1	C	No
30	Goshen	B	12.5	C	15.7	C	No
31	Sand Creek	A	9.4	A	10	C	No
32	Baseline	B	14.0	C	18.5	C	No
33	Fir*	A	6.0	A	8.3	C	No
34	Locust	C	20.2	E	36.3	C	**Yes**
35	Center-Taylor	C	20.2	E	40.6	C	**Yes**
36	New Sweden	B	10.9	B	12.4	C	No
37	Country Club	C	18.1	D	31.5	C	**Yes**
38	Canyon	C	15.6	C	21.9	C	No
39	York*	A	8.6	B	10.7	C	No

+Delay at unsignalized intersection is for the approach with the higher delay. **Signalized Intersection.*

6.4 Level-of-Service Conditions in Five-Year Increments

Traffic operations by 5-year increments were analyzed to determine approximately when segments of US-91 and its intersections would fall below ITD's LOS standards, and therefore when improvements may be needed.

Using the growth rates described previously, traffic was projected in five-year increments between 2004 and 2025. HCM techniques were used to estimate levels-of-service for these five-year increments. These are summarized below for segments (Table 6-4) and intersections (Table 6-5).

Table 6-4: Segment Levels of Service in Five-Year Increments

#	Roadway Segment	2004	2010	2015	2020	2025
1	Siphon Road to Sheepskin Road	B	C	C	C	C
2	Sheepskin Road to I-15 South Blackfoot Interchange	A	B	B	B	B
3	I-15 South Blackfoot Interchange to Airport Road	C	C	D	D	D
4	Airport Road to New Sweden Road	B	C	C	C	D
5	New Sweden Road to York Road	C	C	C	C	D
6	York Road to Sunnyside Road	A	A	A	A	A

Traffic operations from the South Blackfoot I-15 Interchange southward meet ITD's LOS B rural standard until 2025. By 2020, US-91 between the interchange and Airport Road in Blackfoot will operate at LOS D, below the ITD urban standard of LOS C. The New Sweden Road to York Road segment will operate at LOS D by 2010 and continue to be below the LOS B rural standard.

6.5 Future Intersection Operations

Future-year (2025) intersection traffic operations were examined for the corridor. This analysis included a review of levels-of-service, intersection safety including crash risk analysis, and Year 2025 peak hour numbers of left-turning and right-turning vehicles. ITD's turning lane "warrants" were used to identify locations where future volumes would warrant a right-turn or left-turn lane.

Table 6-5 indicates that 2 intersections will fall below ITD's LOS C standard by 2010, an additional 3 intersections by 2015, one additional intersection by 2020 and 2 additional intersections by 2025.

Using the methodology for right-turn lane warrants found in Section 452.02 of the Traffic Manual and Section 452.01 for left turn lane warrants, US-91 intersections were analyzed to determine whether turn lanes are warranted. These were compared to Tables 9 and 10 to identify if any additional lanes are warranted in 2025 relative to existing conditions. The turn lane warrant analysis indicated that no additional right turn lanes are needed beyond those that are warranted under existing conditions. A southbound left turn lane onto Bannock Road is warranted in the future.

Figures 6-1 through 6-5 summarize future corridor and intersection LOS.

Table 6-5: Intersection Levels of Service in Five-Year Increments

#	Intersection	2004	2010	2015	2020	2025
1	Siphon	C	C	C	C	C
2	Tyhee	C	C	C	C	C
3	Reservation	B	C	C	C	C
4	Ballard	B	B	B	B	B
5	Cemetery	B	B	B	C	C
6	Indian School	B	B	B	B	B
7	Agency	C	C	C	C	D
8	Ferry Butte	B	B	B	B	B
9	Bannock	A	B	B	B	B
10	Riverton	A	B	B	B	B
11	I-15 IC #89 SB	C	C	C	C	D
12	I-15 IC #89 NB	A	B	B	B	B
13	Shilling	B	C	C	C	C
14	Walker	C	C	D	D	E
15	Riverton (Blackfoot)	B	B	B	C	C
16a	Grant	B	B	B	B	C
16b	Broadway	A	B	B	B	B
17	Judicial*	B	C	D	E	D
18	Bridge*	A	A	A	A	A
19	Alice*	A	A	A	A	A
20	Highland-Rich	C	D	E	E	F
21	Wooton	B	B	B	C	C
22	Airport	C	C	D	E	E
23	Mark	B	B	B	B	C
24a	Merkley-Tanner	B	B	B	B	C
24b	Hansen	A	A	A	B	B
25a	Weeding	A	A	A	A	A
25b	Cottonwood	B	B	B	B	B
26a	Wapello	B	B	B	B	B
26b	Wapello	B	B	B	B	B
27	Wapello-Firth	B	B	B	B	B
28	Wolverine	B	B	B	B	B
29	Firth	B	B	B	B	B
30	Goshen	B	B	B	B	C
31	Sand Creek	A	A	A	A	A
32	Baseline	B	B	C	C	C
33	Fir*	A	A	A	A	A
34	Locust	C	C	D	D	E
35	Center-Taylor	C	C	D	D	E
36	New Sweden	B	B	B	B	B
37	Country Club	C	C	C	D	D
38	Canyon	C	C	C	C	C
39	York*	A	A	A	B	B

* Existing intersection signalized.

6.6 Traffic Signal Warrants

Traffic signal warrants are the criteria in the Manual on Uniform Traffic Control Devices (MUTCD, 2002 edition) that are used to determine whether installing a traffic signal at an intersection is justified. Traffic signal warrants are based on traffic volumes over one-hour and four-hour periods, vehicle delays and lack of traffic gaps to enter or cross traffic, safety/crash history, existence of high levels of pedestrian traffic, and presence of school zones.

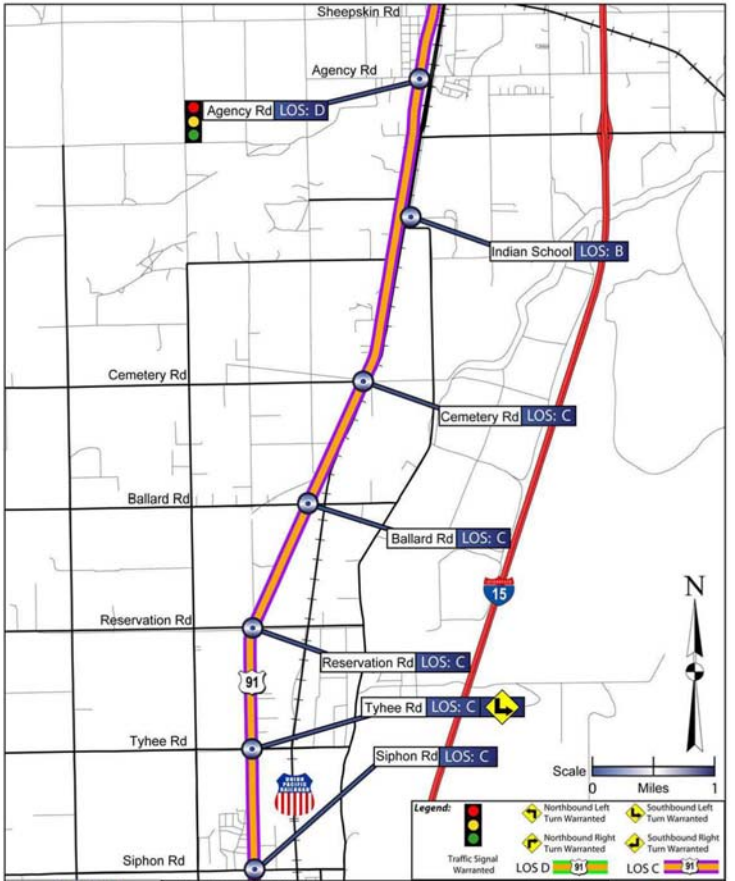
Based on peak hour traffic counts and 2025 traffic projections, Table 6-6 shows the current unsignalized intersections that will meet at least one warrant for traffic signal installation.

Table 6-6: Traffic Signal Warrant Analysis

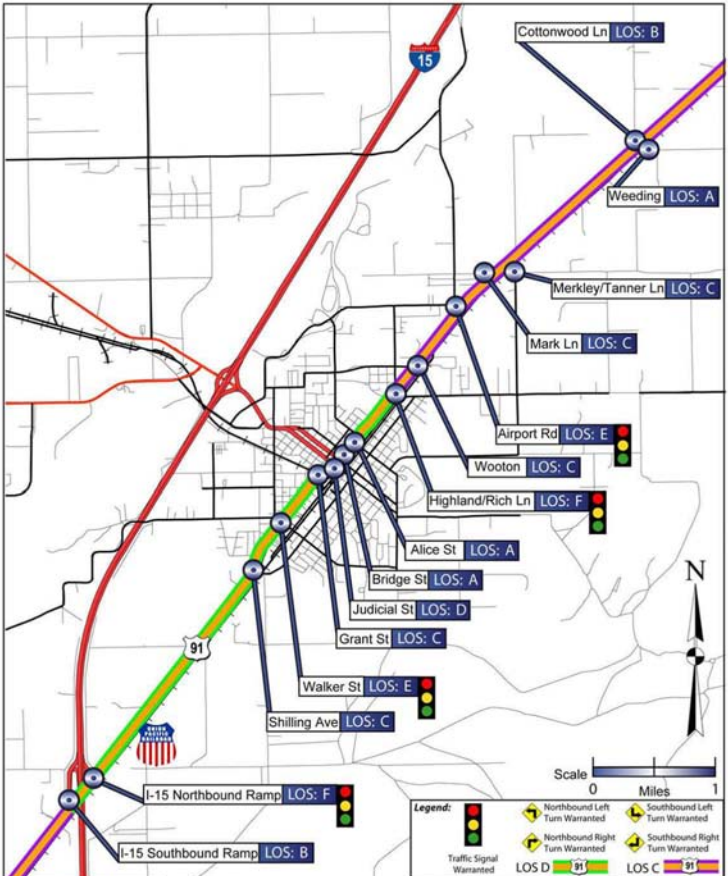
Location	Warrant Met Under Existing Conditions?	Warrant Met Under 2025 No-Action Conditions?
Agency Road	No	Yes
I-15 Northbound ramps	No	Yes
Walker[9] Road	No	Yes
Highland-Rich Road	No	Marginal
Airport Road	No	Yes
Center-Taylor Road	No	Yes[10]

Figures 6-1 through 6-5 illustrate where traffic signals are warranted by 2025.

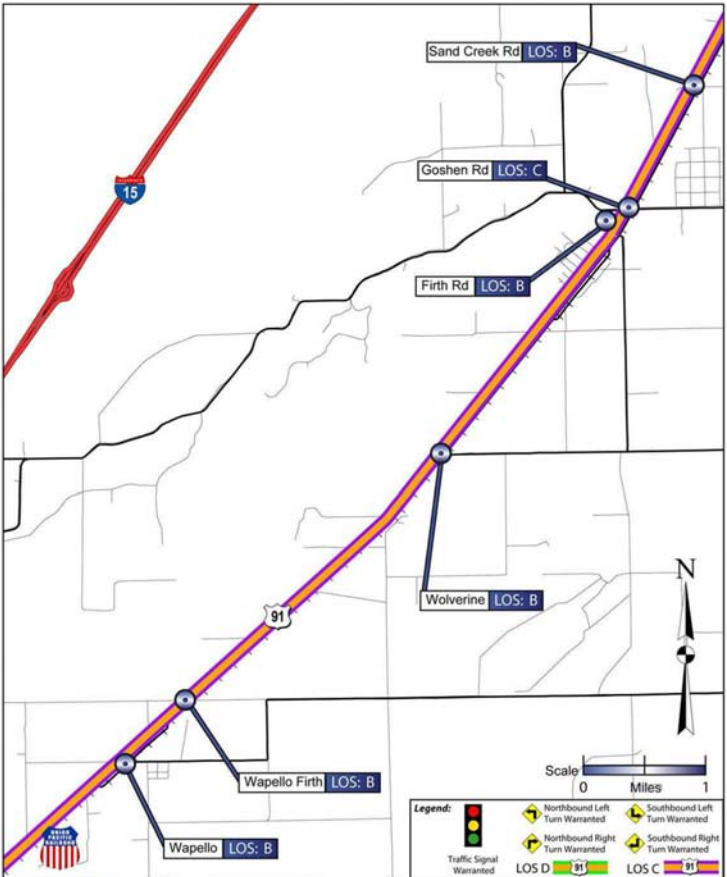
[9] Right-turn volumes are included in the warrant analysis.
[10] Calculations include right-turns.


Sheepskin Rd
Agency Rd
Agency Rd LOS: D
Indian School LOS: B
Cemetery Rd
Cemetery Rd LOS: C
Ballard Rd
Ballard Rd LOS: C
15
Reservation Rd
Reservation Rd LOS: C
91
Tyhee Rd LOS: C
Tyhee Rd
Siphon Rd LOS: C
Siphon Rd
N
Scale
0 Miles 1
Legend:
Traffic Signal Warranted
Northbound Left Turn Warranted
Southbound Left Turn Warranted
Northbound Right Turn Warranted
Southbound Right Turn Warranted
LOS D
LOS C
91
US-91 North Corridor Plan
Project No. STP-1767(101)
Key No. 8116
Future Level-of-Service and Additional Turn Lane Warrants
Figure 6-1
Date: February 2007

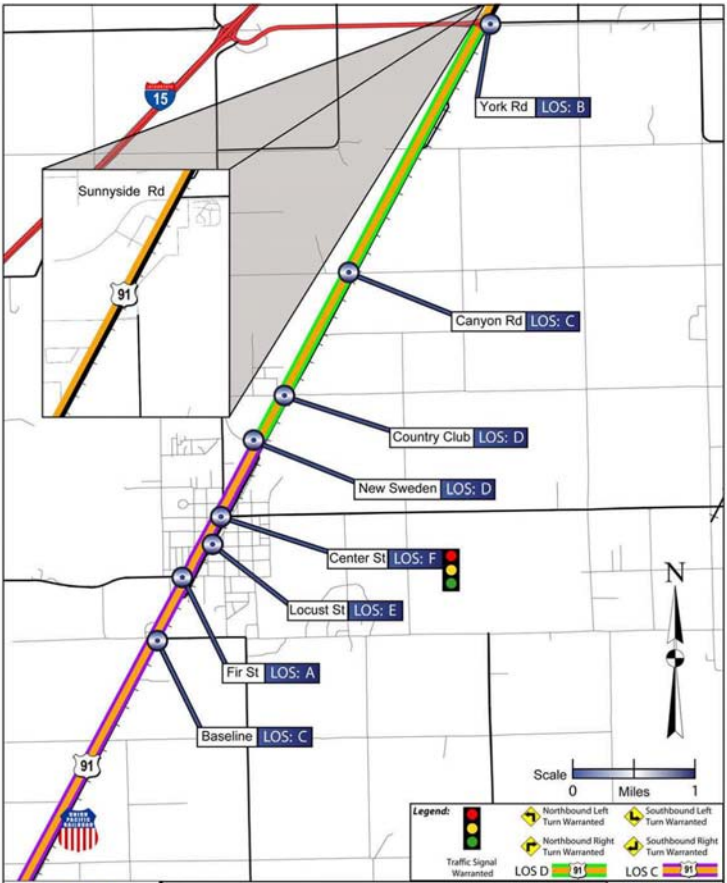
US-91 North Corridor Plan	Project No. STP-1767(101)	Key No. 8116
	Future Level-of-Service and A dditional Turn Lane Warrants	Figure 6-2
		Date: February 2007



US-91 North Corridor Plan	Project No. STP-1767(101)	Key No. 8116
	Future Level-of-Service and Additional Turn Lanes Warrants	Figure 6-3
		Date: February 2007



US-91 North Corridor Plan	Project No. STP-1767(101)	Key No. 8116
	Future Level-of-Service and Additional Turn Lanes Warrants	Figure 6-4
		Date: February 2007



91 US-91 North Corridor Plan	Project No. STP-1767(101)	Key No. 8116
	Future Level-of-Service and Additional Turn Lanes Warrants	Figure 6-5
		Date: February 2007

6.7 Future Safety

Predicting future safety problems must rely on qualitative analysis of existing highway characteristics, traffic operations, and crash history as there is no reliable industry method for forecasting safety conditions. In general, as the traffic volumes on US-91 increase through time and Level of Service falls, existing traffic operational problems can be expected to deteriorate.

Existing contributing factors are likely to include narrow shoulders, lack of turn lanes, sight distance problems at canal crossing structures, proximity of the Union Pacific rail line to US-91 at intersections, skewed intersections, and staggered intersections.

Two study segments currently have crash and fatal crash rates that are above the statewide average: Siphon Road to Sheepskin Road, and I-15 South Blackfoot Interchange to Airport Road. Two segments have fatal crash rates that are at or approaching the statewide average: Sheepskin Road to I-15 South Blackfoot Interchange and New Sweden Road to York Road. Increased traffic volumes could adversely affect this crash rate.

As traffic volumes grow and the amount of time spent behind slower-moving vehicles increases, drivers will become more impatient such that there will be an increased potential for them to attempt unsafe passing maneuvers. Segments where future-year crash rates may increase include I-15 South Blackfoot Interchange to Airport Road and New Sweden Road to York Road. This frustration factor will also impact drivers waiting to turn onto US-91 from side roads.

At-grade railroad crossings near unsignalized intersections also pose a potential safety risk, particularly where side street delays are high. Under congested conditions, there will likely be several vehicles queued waiting to enter US-91, and may back up onto the Union Pacific at-grade railroad crossing. Several of these at-grade crossings have existing sight distance problems that will continue to contribute to the potential for safety issues. Vehicles turning from US-91 eastbound onto side streets with at-grade rail crossings are at-risk for rear-end crashes if the traffic queue extends into the through lanes of US-91.

The lack of right turn lanes at many intersections could contribute to increased potential for rear-end collisions as turning traffic slows in the through travel lane, causing a slowing in following traffic.

The existing crash history does not indicate that skewed intersections or staggered intersections have contributed to safety problems along US-91. However, as traffic volumes increase on both US-91 and the intersecting roadways, sight visibility issues at the skewed intersections and close proximity of staggered intersections may increase the potential for crashes.

Narrow shoulders provide little room for incident management, collision avoidance, or use by oversize vehicles. With increased traffic on US-91, the existing narrow pavement width may begin to adversely affect traffic operations.

6.8 Future Alternative Modes

Both private and public transit providers are expected to continue to provide service within the US-91 North Corridor plan study area. The Statewide Transportation Improvement Plan (STIP) provides near term plans to operations and capital funds for rural public transportation, elderly and disabled transportation, and for the Pocatello Regional Transit agency.

Definitive plans for bicycle and pedestrian facilities along the corridor are not expressed in current planning documents or in the STIP although some of the county and city comprehensive plans contain language that supports the development of these facilities. As roadway improvement projects proceed along US-91, the provision of sidewalks within urban areas and striping for pedestrian crossing of the highway can be expected. Additional pedestrian facilities within the urban areas of the corridor are likely to be implemented as a condition of new development.

6.9 Future Air and Rail Service

Scheduled airline service is expected to continue at both the Pocatello and Idaho Falls regional airports. Other commercial air services and private aviation is also likely to continue at McCarley Field in Blackfoot as well as Pocatello and Idaho Falls.

Discussions with Union Pacific Transportation Company indicate that freight service on the UP line parallel to US-91 is expected to continue well into the future. Recent investment in a rail spur to service new industrial development in southern Idaho Falls supports this likelihood.